

Amendment and Response

Applicant: Robin Alexis Takasugi et al.

Serial No.: 10/672,975

Filed: September 26, 2003

Docket No.: 10014268-1 (H303.154.101)

Title: PREFETCH CONTROLLER FOR CONTROLLING RETRIEVAL OF DATA FROM A DATA STORAGE DEVICE

REMARKS

The following remarks are made in response to the Non-Final Office Action mailed October 12, 2005. In that Office Action, the Examiner rejected claims 1-12 and 15-30 under 35 U.S.C. §102(e) as being anticipated by Kaneko et al., U.S. Patent No. 6,427,184 ("Kaneko"). Claims 13 and 14 were rejected under 35 U.S.C. §103(a) as being unpatentable over Kaneko in view of Kanai et al., U.S. Patent No. 6,341,335 ("Kanai").

With this Response, claims 1, 9, 10, and 20 have been amended. Claims 1-30 remain pending in the application and are presented for reconsideration and allowance.

35 U.S.C. §102 Rejections

The Examiner rejected claims 1-12 and 15-30 under 35 U.S.C. §102(e) as being anticipated by Kaneko et al., U.S. Patent No. 6,427,184 ("Kaneko"). Independent claim 1 recites "a sequential read detector configured to generate a new sequential read indication for the current host command if the current host command and a previously received host command specify read operations that are non-sequential" and "a transfer length generator configured to provide a first transfer length value to the data storage device if the new sequential read indication is generated for the current host command, and provide a second transfer length value to the data storage device if the new sequential read indication is not generated for the current host command". As amended, independent claim 1 also recites "wherein the first transfer length value is determined by adding a prefetch value to a transfer length value specified in the current host command." There is no teaching or suggestion in Kaneko regarding adding a prefetch value to a transfer length value specified in a current non-sequential read command, and then providing this sum to a data storage device.

As the Examiner noted, Kaneko discloses a table 4 (Figure 1) that includes an "[I/O stream size]" field. Kaneko discloses that this field is updated for sequential I/O streams or near sequential I/O streams by adding the size of the current I/O stream to the previous value in the "[I/O stream size]" field. (Kaneko at col. 4, lines 54-61). Thus, this field represents the size "of the whole I/O stream". (Kaneko at col. 4, lines 60-61). There is no teaching or suggestion in Kaneko to add a prefetch value to the I/O stream size specified in a current I/O

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stream, and then providing this sum to a data storage device. Rather, as indicated above, Kaneko discloses that the current I/O stream size is added to the previous I/O stream sizes, and this sum gives an indication of the size of the whole I/O stream.

Kaneko also discloses that table 4 includes a “[prefetch size]” field. (Kaneko at col. 4, line 41). However, there is no teaching or suggestion in Kaneko to add the value in this field to the I/O stream size specified in a current I/O stream, and then provide this sum to a data storage device. Rather, Kaneko appears to perform a prefetch as a separate internal transfer following a transfer requested by the host 2. (See, e.g., Kaneko at col. 5, lines 52-65).

In view of the above, independent claim 1 is not taught or suggested by Kaneko. Applicant respectfully requests removal of the rejection of claim 1 under 35 U.S.C. §102(e), and requests allowance of this claim. Since dependent claims 2-11 further define patentably distinct claim 1, and are further distinguishable over the cited reference, claims 2-11 are believed to be allowable over the cited prior art. Applicant respectfully requests removal of the rejection of claims 2-11 under 35 U.S.C. §102(e), and requests allowance of these claims.

Independent claim 12 recites “adding a prefetch length value to the first transfer length value if the current read command and the previous read command are non-sequential, thereby generating a second transfer length value; and outputting the second transfer length value to the data storage device.” As described above with respect to claim 1, there is no teaching or suggestion in Kaneko regarding adding a prefetch value to a transfer length value specified in a current non-sequential read command, and then providing this sum to a data storage device. For the reasons set forth above with respect to claim 1, Kaneko does not teach or suggest the above-quoted limitations of claim 12.

In view of the above, independent claim 12 is not taught or suggested by Kaneko. Applicant respectfully requests removal of the rejection of claim 12 under 35 U.S.C. §102(e), and requests allowance of this claim. Since dependent claims 15-16 further define patentably distinct claim 12, and are further distinguishable over the cited reference, claims 15-16 are believed to be allowable over the cited prior art. Applicant respectfully requests removal of the rejection of claims 15-16 under 35 U.S.C. §102(e), and requests allowance of these claims.

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Independent claim 17 recites “transfer length generation means for adding a prefetch length value to a transfer length value specified in the current host command if the current host command specifies a non-sequential read operation, the transfer length generation means configured to output a sum of the prefetch length value and the transfer length value to the storage means.” As described above with respect to claim 1, there is no teaching or suggestion in Kaneko regarding adding a prefetch value to a transfer length value specified in a current non-sequential read command, and then providing this sum to a data storage device. For the reasons set forth above with respect to claim 1, Kaneko does not teach or suggest the above-quoted limitations of claim 17.

In view of the above, independent claim 17 is not taught or suggested by Kaneko. Applicant respectfully requests removal of the rejection of claim 17 under 35 U.S.C. §102(e), and requests allowance of this claim. Since dependent claims 18 and 19 further define patentably distinct claim 17, and are further distinguishable over the cited reference, claims 18 and 19 are believed to be allowable over the cited prior art. Applicant respectfully requests removal of the rejection of claims 18 and 19 under 35 U.S.C. §102(e), and requests allowance of these claims.

Independent claim 20, as amended, recites “generating a new sequential read indication for the current host command if the current host command and a previously received host command specify read operations that are non-sequential; outputting a first transfer length value to the data storage device if the new sequential read indication is generated for the current host command, wherein the first transfer length value is determined by adding a prefetch value to a transfer length value specified in the current host command; and outputting a second transfer length value to the data storage device if the new sequential read indication is not generated for the current host command, the second transfer length value less than the first transfer length value.” As described above with respect to claim 1, there is no teaching or suggestion in Kaneko regarding adding a prefetch value to a transfer length value specified in a current non-sequential read command, and then providing this sum to a data storage device. For the reasons set forth above with respect to claim 1, Kaneko does not teach or suggest the above-quoted limitations of claim 20.

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In view of the above, independent claim 20 is not taught or suggested by Kaneko. Applicant respectfully requests removal of the rejection of claim 20 under 35 U.S.C. §102(e), and requests allowance of this claim. Since dependent claims 21-30 further define patentably distinct claim 20, and are further distinguishable over the cited reference, claims 21-30 are believed to be allowable over the cited prior art. Applicant respectfully requests removal of the rejection of claims 21-30 under 35 U.S.C. §102(e), and requests allowance of these claims.

35 U.S.C. §103 Rejections

The Examiner rejected claims 13 and 14 under 35 U.S.C. §103(a) as being unpatentable over Kaneko in view of Kanai et al., U.S. Patent No. 6,341,335 ("Kanai"). Dependent claims 13 and 14 are dependent on independent claim 12. As described above with respect to claim 12, Kaneko does not teach or suggest "adding a prefetch length value to the first transfer length value if the current read command and the previous read command are non-sequential, thereby generating a second transfer length value; and outputting the second transfer length value to the data storage device", as recited in independent claim 12. Kanai also does not teach or suggest these limitations of independent claim 12. Since dependent claims 13 and 14 further define patentably distinct claim 12, and are further distinguishable over the cited references, claims 13 and 14 are believed to be allowable over the cited prior art. Applicant respectfully requests removal of the rejection of claims 13 and 14 under 35 U.S.C. §103(a), and requests allowance of these claims.

CONCLUSION

In view of the above, Applicant respectfully submits that pending claims 1-30 are in form for allowance and are not taught or suggested by the cited references. Therefore, reconsideration and withdrawal of the rejections and allowance of claims 1-30 is respectfully requested.

No fees are required under 37 C.F.R. 1.16(h)(i). However, if such fees are required, the Patent Office is hereby authorized to charge Deposit Account No. 08-2025.

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The Examiner is invited to contact the Applicant's representative at the below-listed telephone numbers to facilitate prosecution of this application.

Any inquiry regarding this Amendment and Response should be directed to Jeff A. Holmen at Telephone No. (612) 573-0178, Facsimile No. (612) 573-2005. In addition, all correspondence should continue to be directed to the following address:

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Respectfully submitted,

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CERTIFICATE UNDER 37 C.F.R. 1.8:

The undersigned hereby certifies that this paper or papers, as described herein, are being deposited in the United States Postal Service, as first class mail, in an envelope address to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 15th day of December, 2005.

By: Jeff A. Holmen
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